Michigan DOT Research Program

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Presentation Outline

- Research Priorities
- Program Overview
- Organizational Structure
- Program Development
- TRB Participation

Research Priorities

- Bridges & Structures
  - Non-Destructive Evaluation (NDE) Techniques for Bridges
  - Evaluation & Analysis of Decked Bulbed T Beam Bridges
  - Develop Design and Construction Guidelines for Strengthening Bridges using Fiber Reinforced Polymers (FRP)
  - Development of Non-Proprietary Ultra High Performance Concrete for bridges
  - Evaluation of Long Term Performance of Carbon Fiber Polymer Reinforcing in Pre-Stressing and Post Tensioning
  - Assess and Develop standards for Accelerated Bridge Construction (ABC) techniques.

Research Priorities

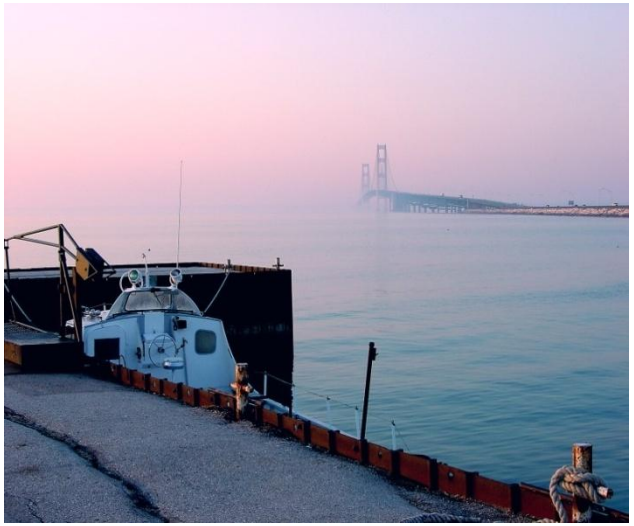
- Transportation Safety
  - Improving safety for older drivers
  - Improved inputs for the Highway Safety Manual
  - Evaluation Non-Freeway Rumble Strips Part II
  - Evaluating pavement marking practices and performance
  - Short and long term impacts of speed limit changes
  - Assess the benefits of high tension cable barrier on Michigan roadways
  - Comparison of alternative pedestrian crossing treatments

Research Priorities

- Pavements/Materials
  - Development of Empirical Mechanistic Pavement Design Input Values
  - Identifying Best Practices for the use of Recycled Pavement Materials
- Environment & Water Resources
  - Evaluation of sewer and culvert installations
- Asset Management
  - Wireless Data Collection and Retrieval of Bridge Condition Data
  - Evaluating Roadway Surface Rating Technologies

Research Priorities

- Mobility/Operations/Signals
  - Assessing Michigan's Commercial Vehicle Enforcement Strategies and Facilities
  - Evaluating the costs and benefits of mobility investments
- Transit
  - Identify barriers and solutions to developing sustainable regional transit systems
  - Evaluation of transit technologies and develop updated transit vehicle specifications
  - Study the potential for utilization and recycling of lithium ion batteries for public transit vehicles
  - Study the feasibility of developing a statewide transit mobility measurement tool



Research Priorities

- Construction/Geotech
  - Effect of Pile Driving on nearby structures
  - Predictive Modeling of Freeze Thaw of Frost Susceptible Soils
  - Evaluating the short and long term impacts of expedited roadway construction
  - Performance evaluation of Subgrade Stabilization using Recycled Materials

- Maintenance
  - Evaluating the use of Tow Plows
  - Monitoring Highway Assets with Remote Technologies
  - Evaluation of UAV's for Transportation Purposes

Research Priorities

- Intelligent Transportation Systems (ITS)
  - Connected Vehicle Test Track
  - Costs and benefits of ITS Investments
  - Advance Applications of Intellidrive Data Use and Analysis and Processing (DUAP)
- Rail
  - Freight Rail Connectivity

Historical Expenditures

- 2011 $5.2 Million
- 2012 $7.2 Million
- 2013 $7.3 Million
- 2014 $12 Million Budgeted

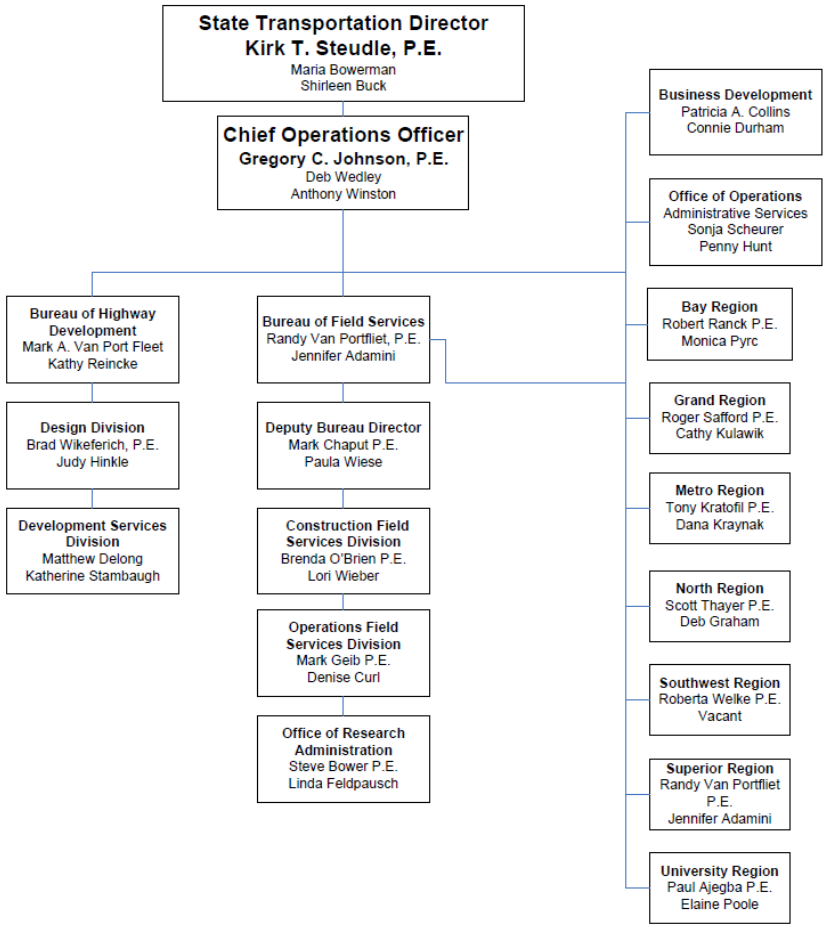
2014 Program Budget

- Approximately $ 12 Million
- 51 Individual Research Projects (72%)
- 15 Pooled Fund Studies (5%)
- 7 UTC Partnerships (5%)
- 8 Research Centers of Excellence (2%)
- AASHTO TSP/TRB/SHRP 2 (15%)
- Technology Transfer Seminars (1%)

2014 Funding Sources

- MDOT apportions 25% of SPR to SPR Part II
- SPR Part II = $5 Million
- State Funds = $2 Million per year
- $5 Million Supplemental (2014 only)

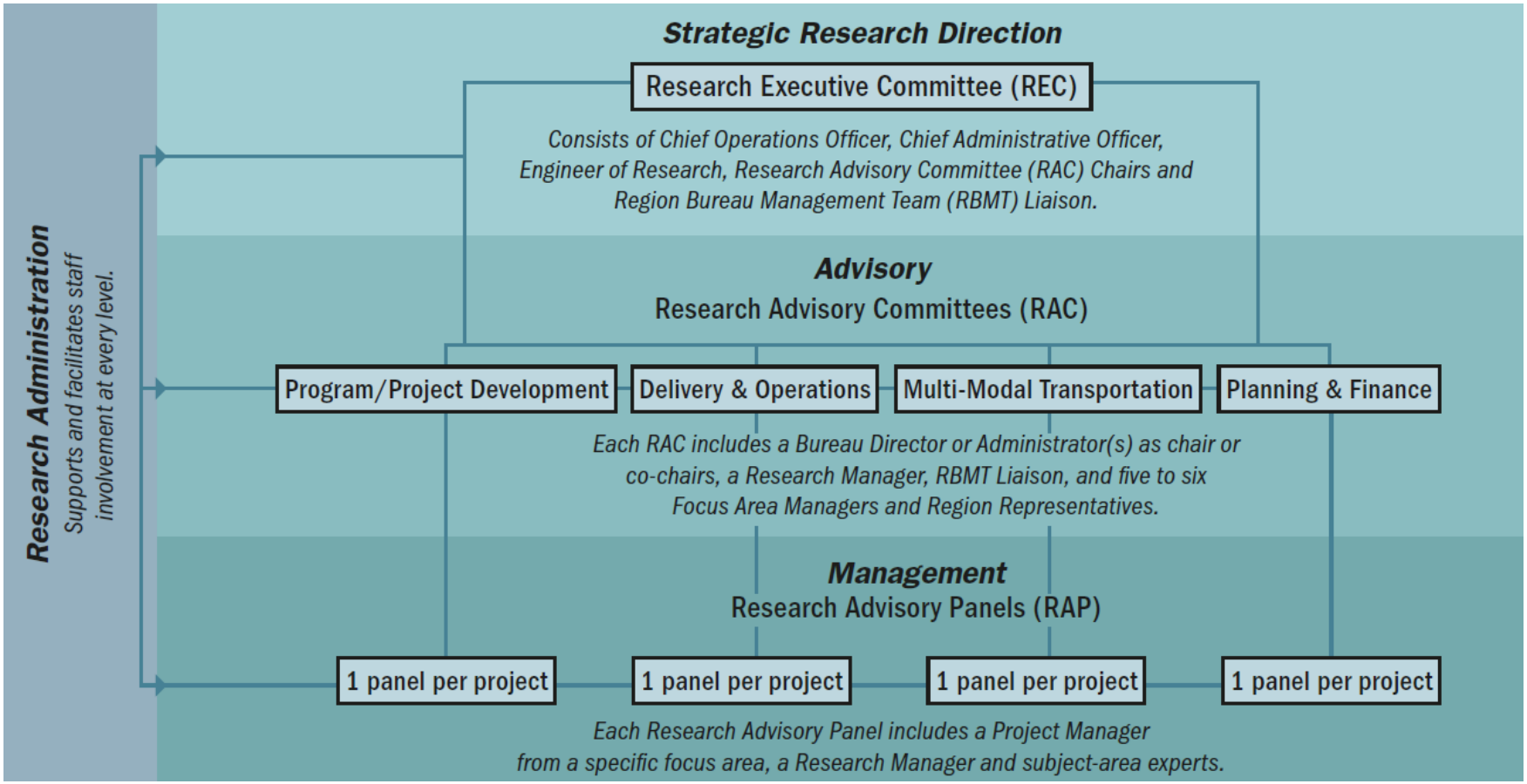
Organizational Structure



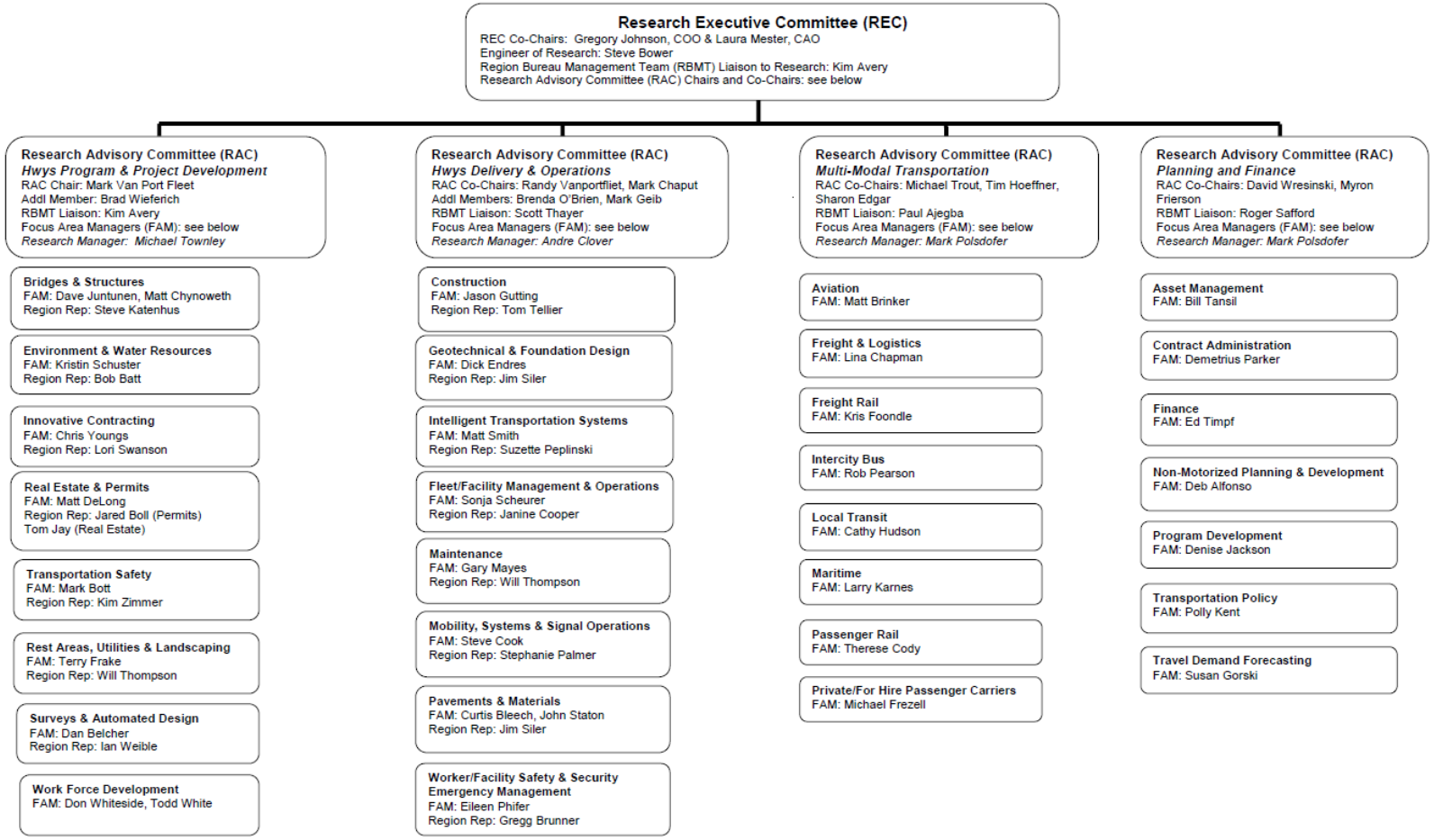
2015/2016/2017 Program Development

- Strategic Priorities (Aug-Sept 2013)
- Call for Ideas (Nov-Dec 2013)
- Idea Development (Jan-April 2014)
- Research Summit (Early May 2014)
- Problem Statements Developed for 2015/2016/2017 Projects (May-June 2014)
- 2015 Program Approval/2016-2017 Pre-Program Approval (July-August 2014)

Program Development



Program Development



TRB Participation

- Annual Meeting – 25 to 30 Staff Attend (TRB Attendance Template)
- 30 to 35 Staff participate on TRB Committees and Cooperative Research Panels
- TRB participation
  - 70% Managers
  - 30% Staff

Cooperative Research Submittals (2010 to 2013)

- NCHRP Project Proposals
  - 3 Submitted
  - 1 Selected
  - NCHRP 12-97 “Guide Specification for the Design of Concrete Bridge Beams Prestressed with CFRP Systems”

- NCHRP Synthesis Proposals
  - 5 Submitted
  - 1 Selected
  - NCHRP Synthesis 20-05/Topic 44-10 “Synthesis of Research on Non-Nuclear Methods for Compaction Control”

Questions???